REDUCING SAMPLES OF AGGREGATES TO TESTING SIZE FOP FOR AASHTO T 248

Scope

This procedure covers the reduction of samples to the appropriate size for testing in accordance with AASHTO T 248. Techniques are used that minimize variations in characteristics between test samples and field samples.

This procedure applies to fine aggregate (FA), coarse aggregate (CA), and mixes of the two, and may also be used on soils, portland cements, fertilizers, and other materials that must be reduced in size.

Samples of fine aggregates that are drier than the saturated surface dry (SSD) condition shall be reduced by a mechanical splitter according to Method A. Samples of FA that are wetter than SSD shall be reduced by Method B, or the entire sample may be dried to the SSD condition, using temperatures that do not exceed those specified for any of the tests contemplated, and then reduced to test sample size using Method A. Samples of CA or mixtures of FA and CA may be reduced by either method.

Apparatus

Method A – Mechanical Splitter

Sample splitter shall have an even number of equal width chutes, but not fewer than 8 for coarse aggregate or 12 for FA, which discharge alternately to each side of the splitter. The minimum width of individual chutes shall be approximately 50 percent larger than the largest particles in the sample to be split. The splitter shall be equipped with two receptacles to hold the two halves of the sample following splitting. It shall also be equipped with a hopper or straightedge pan that has a width equal to or slightly less than the overall width of the assembly of chutes, by which the sample may be fed at a controlled rate to the chutes. The splitter and accessory equipment shall be so designed that the sample will flow smoothly without restriction or loss of material.

Method B – Quartering

- Straightedge scoop, shovel, or trowel
- Broom or brush
- Canvas or plastic blanket, approximately 2 m by 3m (6 by 9 ft)

Sample Preparation

If the sample is wetter than the SSD condition and Method A – Mechanical Splitter is to be used, dry the material using temperatures not exceeding those specified for any of the tests contemplated for the sample.

Procedure

Method A – Mechanical Splitter

Place the sample in the hopper or pan and uniformly distribute it from edge to edge so that approximately equal amounts flow through each chute. The rate at which the sample is introduced shall be such as to allow free flowing through the chutes into the hoppers below. Split the sample from one of the two hoppers as many times as necessary to reduce the sample to the size specified for the intended test. The portion of the material collected in the other receptacle may be reserved for reduction in size for other tests. Determine the mass of each part of the split. If the two masses differ by more than 5 percent, corrective action must be taken.

Calculation

Splitter check: 5127 total sample mass

Splitter pan #1: 2583
Splitter pan #2: 2544

$\frac{2544}{2583}$ X100 = 98.5 100-98.5 = 1.5%

Method B – Quartering

Use the "A" procedure, the "B" procedure, or a combination or both.

"A" Procedure:

1. Place the sample on a hard, clean, level surface where there will be neither loss of material nor the accidental addition of foreign material.

2. Mix the material thoroughly by turning the entire sample over three times. With the last turning, shovel the entire sample into a conical pile by depositing each shovelful on top of the preceding one.

3. Flatten the conical pile to a uniform thickness and diameter by pressing down with a shovel. The diameter should be four to eight times the thickness.

4. Divide the flattened pile into four approximately equal quarters with a shovel or trowel.

5. Remove two diagonally opposite quarters, including all fine material, and brush the cleared spaces clean.

6. Successively mix and quarter the remaining material until the sample is reduced to the desired size.

7. The final test sample consists of two diagonally opposite quarters.

"B" Procedure

1. Place the sample on the blanket.

2. Mix with shovel as described in the "A" procedure or by alternately lifting each corner of the blanket and pulling it over the sample toward the diagonally opposite corner, causing the material to be rolled.

3. Flatten the pile as described in the "A" procedure.

4. Divide the sample as described in the "A" procedure or insert a stick or pipe beneath the blanket and under the center of the pile, then lift both ends of the stick, dividing the sample into two roughly equal parts. Remove the stick leaving a fold of the blanket between the divided portions. Insert the stick under the center of the pile at right angles to the first division and again lift both ends of the stick, dividing the sample into four roughly equal quarters.

5. Remove two diagonally opposite quarters, being careful to clean the fines from the blanket.

6. Successively mix and quarter the remaining material until the sample size is reduced to the desired size.

7. The final test sample consists of two diagonally opposite quarters.